

Appl. No. 10/580,231  
Amendment dated: March 11, 2009  
Reply to OA of: December 16, 2008

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1(previously presented). A method for producing a particulate carbon product comprising:

- flowing a gas through an inlet port in a lower section of a reactor vessel having a first cross-sectional area;
- passing said gas from the lower section to an upper section of the reactor vessel having a second cross-sectional area, via a middle section having a cross-sectional area smaller than said first and second cross-sectional areas;
- flowing said gas through a gas outlet port in the upper section;
- using the flow of said gas to support a reaction bed of catalyst-containing particulate material in said upper section;
- harvesting a carbon product by allowing it to fall from said upper section into said lower section; and
- discharging particulate carbon product from the lower section of the reactor vessel via an outlet port.

2(original). A method as claimed in claim 1, wherein the particulate carbon product is prevented from passing through the gas outlet port by means of a gas permeable barrier.

3(previously presented). A method as claimed in claim 1, wherein the gas flow between the gas inlet port and gas outlet port is such that the reaction bed is a fluidised bed.

4(previously presented). A method as claimed in claim 1, wherein the gas flow between the gas inlet port and gas outlet port is such that the reaction bed is a

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fixed bed.

5(previously presented). A method as claimed in claim 1 wherein catalyst is introduced into the reactor vessel via the gas inlet port.

6(original). A method as claimed in claim 5, wherein the inlet gas comprises a carbonaceous gas and the catalyst is entrained therein.

7(previously presented). A method as claimed in claim 1 wherein the catalyst is a transition metal.

8(previously presented). A method as claimed in claim 1 wherein catalyst is introduced into the reactor vessel beneath the reaction bed.

9(previously presented). A method as claimed in claim 1 wherein the catalyst is introduced into the reactor vessel proximate the reaction bed.

10(previously presented). A method as claimed in claim 1 wherein the temperature in the reaction bed is between 400 and 900 deg. C.

11(previously presented). A method as claimed in claim 1 wherein the temperature in the reaction bed is between 550 and 900 deg. C.

12(previously presented). A method as claimed in claim 1 wherein the pressure within the reaction bed is between 2 and 25 bar.

13(previously presented). A method as claimed in claim 1 wherein the pressure within the reaction bed is between 5 and 20 bar.

14(previously presented). A method as claimed in claim 1 wherein the pressure within the reaction bed is between 5 and 15 bar.

15(previously presented). A method as claimed in claim 1 wherein inlet gas is introduced into the reactor vessel at an elevated temperature.

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16(previously presented). A method as claimed in claim 1 wherein inlet gas is introduced into the reactor vessel via a plurality of gas inlet ports.

17(original). A method as claimed in claim 16 wherein inlet gas is introduced into the reactor vessel at different temperatures.

18(previously presented). A method as claimed in claim 1 wherein carbon particulate product is discharged through a product outlet port disposed beneath the reaction bed.

Claims 19-46(canceled).